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ABSTRACT

The ninth of thirteen units for an environmental education curriculum is presented in this teacher's guide. The collection of units for grades K-12 was written in response to a mandate from the Minnesota State Legislature through a bill making provisions for developing and implementing a state-wide environmental education program. The units are experimental in nature and are not oriented as to subject matter or academic discipline. The eighth grade unit, Social-Physical Environment, involves students in practicing "survival" techniques for more comfortable living in the physical, tangible realm of the social environment. The unit attempts to show the pupils how to solve a "real", living problem based on the theory that often a person's inability to survive in a particular social environment is the result of not knowing how to do what he knows he must do. Activities aimed at providing real-world involvement through environmental investigation include meal planning, grocery shopping, product quality analysis, carbohydrate diet recording, determination of product packaging, experiences in business practices, and applying consumer pressure for environmental control. A list of materials needed precedes each activity. Background information includes a narration of federal legislation relating to food. (BL)

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SOCIAL - PHYSICAL

ENVIRONMENT

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To The Reader:

The following unit of instruction-suggestions is part of a sample collection of units for grades K-12. The sample collection was written in response to a mandate from the Minnesota State Legislature--Section 1. Minnesota Statutes 1967, Chapter 126, Amendment 126.111 (March 1969).

This bill made provisions for developing and implementing a statewide Environmental Education Program.

Thirteen units have been developed. They are experimental and need to be evaluated by teachers. New methods, new activities and a new area of awareness are being suggested. The reader must be aware that these units for instruction are not "subject matter" or "academic discipline" oriented. The question cannot be asked whether a unit should be taught during a language period, a social studies period or math time. Instead, ask this question when deciding where and when to use a unit: "Is this unit a real-life experience of concern to the students?" If the answer is "yes," then students should respond positively and the unit will turn out to be environmental education. Environmental education is real-world involvement.

One of the best evaluations of the success of these suggestions for increasing student understanding (and your success of getting across to the students) is the application of learning that students make.

But we shouldn't wait until the students graduate before we look at application of learning. The main reason not to wait is that students need to have some guided practice in application as well as practice in interpreting what is going on in the world.

These units are isolated samples of environmental investigation. The user must understand that each investigation needs to be tied to a <u>real</u> local concern. And further, that each investigation needs to be applied to constructively resolving or implementing that concern--no matter how small. Local concerns may be as grand as a community movement to influence local highway building, or as small as subtly manipulating the traffic pattern of students leaving a classroom.

Quality of student involvement and application of understanding can often be evaluated best through the experienced teacher's interpretation of what parents and the community say about what the students do and say. There is no objective, multiple-choice test which will evaluate a student's success at working with others to resolve a problem of living in an environment. But evaluation can come from observation by someone who has already gained experience in wise living. It is humbly hoped that this unit contains

suggestions which allow students to practice wise living.

Through this same sense of evaluation, it is also the teacher who is best able to choose the appropriate experience or investigation to educate his students. This unit was aimed at a specific grade level when it was developed but there is no rule which says it will not work for any level or any situation K through 12 if the teacher feels that it can be adapted and used. Also, there is no rule which says that a unit cannot be torn apart and used as separate parts or in different ways. This unit is a tool or a building block. The teacher is the designer or engineer.

The unit is divided into sections for convenience. White pages speak to the teacher, yellow pages are student materials.

Read this unit understanding the writers' intention that very little of this material should be told to students; they should come to know it by doing.

The writers,

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INTRODUCTION

Another unit in this Environmental Education Series involves students in practicing "survival" techniques in the natural physical world. This unit deals with "survival" techniques in society.

With the many comforts and technological advantages of our communities, comfortable existence is still a hard-learned and hard-won prize, especially so for those who do not have a secure position financially, socially, familiarly or educationally.

Education is our main concern here, of course. But the education must be an experience where the guidance provides confidence. The student must be shown how to solve a real, living problem. So often a person's inability to survive in a particular social environment is the result of not knowing how to do what he knows he must do.

This unit provides some techniques and practice sessions for more comfortable living in the physical, tangible realm of the social environment.

BACKGROUND INFORMATION

"Federal Legislation Relating to Food"*

Governmental protection for the consumer dates back to at least 300 B.C. when an Indian law prohibited the adulteration of grain, scents, and medicines. English laws of 1215 and 1597 provided for the seizure of certain harmful foods before they could reach the consumer.

In the United States the first laws passed by Congress for consumer protection dealt primarily with imports. An act passed in 1890 prevented the importation of adulterated food. The early legislation regulating foods and drugs produced in this country was enacted by individual states. At the turn of the century, however, an increasing proportion of foods and drugs was being shipped between states. The states were limited in their power to regulate foods from other areas and producers found it increasingly difficult to comply with the labeling provisions and other requirements which varied among states. Further, the consumer wanted protection from unscrupulous practices, while enjoying the wholesome products provided by reputable food producers. It became apparent that federal legislation was needed.

The first major legislation regulating food in this country was the Federal Food and Drugs Act (sometimes called the Pure Food Law) passed in 1906. The purpose of our food legislation has been summed up by George P. Larrick, Commissioner of Food and Drugs, Department of Health, Education, and Welfare, writing in the 1959 Yearbook of Agriculture:

> "Federal food laws for more than half a century have been dedicated to safety, wholesomeness, and the type of labeling that will permit citizens to make intelligent selections in their purchases. Telling people what to eat is attempted by education rather than regulation. Their choices affect the whole food industry, for in the long run the practices of manufacturers reflect consumers' wishes."

* Reprinted from Food Additives, through the courtesy of the Manufacturing Chemists' Association, Inc. Washington, D.C.

Two agencies in the government share responsibilities for insuring a safe and wholesome food supply. The Food and Drug Administration, which is a unit of the Department of Health, Education, and Welfare, is responsible for the enforcement of the Federal Food, Drug, and Cosmetic Act. The Department of Agriculture administers the Federal Meat Inspection and Poultry Products Inspection Acts and certain other laws relating to agriculture. A third governmental agency, the Federal Trade Commission, (among other duties) has jurisdiction over false and misleading advertisements to the public regarding food.

The Evolution of the Current Federal Food, Drug, and Cosmetic Act

This act, which regulates the purity of food, is an outgrowth of the Federal Food and Drugs Act of 1906. The 1906 law underwent a complete revision in 1938 and since then has had several major amendments.

The Federal Food and Drugs Act, as originally enacted in 1906, made illegal the adulteration of food and drugs entering into interstate commerce. (Food and drugs produced locally for local consumption continued to be regulated by the individual states.) Adulteration of a food was defined to include the addition of poisonous and deleterious substances to foods, the extraction of valuable constituents, the concealment of inferiority, substitution of other articles or the mixture of substances which would adversely affect quality or strength.

The law contained some labeling restrictions. At that time the law was administered by the Secretary of Agriculture.

The law was recognized as good for its time. However, as conditions changed and advances were made in medical science and food technology, it became obvious that the law needed modernizing. A new bill was introduced in Congress in 1933, and after years of legislative hearings and many revisions, the Federal Food, Drug, and Cosmetic Act of 1938 was adopted.

The Federal Food, Drug, and Cosmetic Act of 1938 retained the provisions of the original act and added new provisions to meet the requirements of consumer protection under then current conditions. The 1938 Act, which is still the basic Federal legislation in this field, applies to exports and imports, and to commerce between the states and within the District of Columbia and the territories. While the law is a long and highly technical document, these points relating to food are pertinent to consumers.

Food is defined as "Articles used as food or drink for man or other animals, chewing gum, and articles used for components of any such article." While water is a drink and therefore a "food" under the act, public drinking water is usually the concern of the U. S. Public Health Service and state and local health departments.

The adulteration of food is prohibited. Food containing an added poisonous or deleterious substance is deemed to be unsafe unless the added substance is required or cannot be avoided by good manufacturing practice and a safe level of use has been established. Adulteration is also defined to include all kinds of cheating such as: the addition of a substance to increase bulk or weight, or to reduce strength or quality, or to make an article appear of greater value; the removal of a constituent which would ordinarily be expected to be present; the partial or complete substitution of one product for another; or concealing an inferior or damaged product.

Truthful labeling is made mandatory. The label must tell what is in the package, list the weight or volume of the contents, and must not be false or misleading in any way. Sometimes labels have been termed "misleading" when they fail to tell certain facts that the consumer has a right to expect. The label must give the name and place of business of the manufacturer, packer, or distributor. Required statements must be prominently placed on the label so as to be easily read.

Definitions and standards for foods are authorized whenever, in the judgment of the Secretary of Health, Education, and Welfare, such action will "promote honesty and fair dealing in the interest of consumers."

Standards of identity establish what a given product is -- that is, what the consumer has a right to expect when he or she asks for the food by its common name. For example, the standard of identity for fruit preserves and jellies requires not less than 45 parts of fruit or fruit juice to each 55 parts of sugar. If less than that proportion of fruit or fruit juice is used, the product must be labeled "imitation." The standard of identity for any food contains a listing of both required and optional ingredients.

Standards of quality for a number of canned fruits and vegetables have been established. These minimum standards and specifications are for such factors as tenderness, color, and freedom from defects. If the food does not meet the standards, it must be labeled "Below Standard in Quality," followed by a statement such as "excessively broken" or another term to describe why the product fails to meet the standard.

Standards of fill of container tell the packer how full the container must be to avoid deception of the consumer. These standards are especially important for products that may shake down or settle after filling. Standards of fill have been established for such foods as shellfish, and some canned fruits and vegetables.

Some Foods for Which Definitions and Standards Have Been Established

- Chocolate and cocoa products
- Wheat and corn flour and related products
- Macaroni and noodle products
- Bakery products
- Milk and cream
- Cheeses and cheese products
- Dressings for food -- mayonnaise, French dressing, salad dressing
- Canned fruit and canned fruit juices
- Fruit butters, jellies, preserves and related products
- Shellfish
- Canned tuna fish
- Eggs and egg products
- Oleomargarine, margarine
- Canned vegetables and vegetable products

Three Major Amendments to the 1938 Law

(1) The Miller Pesticide Amendment to the Food, Drug, and Cosmetic Act of 1938 was passed in 1954. This Amendment establishes a procedure for the setting of safe amounts (generally referred to as tolerances) for residues of pesticides which may remain on fresh fruits, vegetables, and other raw agricultural commodities when shipped interstate. Under this Amendment, the Department of Agri-

culture certifies that the pesticide proposed by the manufacturer for use in killing insects, disease organisms, weeds, or other crop pests is useful for the purpose claimed. The Food and Drug Administration sets the tolerances for the quantities that may remain in or on the food. These tolerances are based on an evaluation of scientific evidence (including results of animal tests) submitted by the pesticide manufacturer.

(2) The 1958 Food Additives Amendment to the Food, Drug, and Cosmetic Act had a two-fold purpose: (1) to protect the public health by requiring proof of safety before a substance may be added to a food, and (2) to advance food technology and improve the food supply by permitting the use in foods of substances which are safe at the levels of intended use.

The food and chemical industries as well as many consumer groups testified before congressional committees in support of the principle that safety testing should be required by law. Reputable manufacturers and users of food additives had always made thorough tests for safety, and, prior to the 1958 legislation, had often consulted with Food and Drug officials during their investigations. There was, however, no provision in the law that made this pretesting or consultation mandatory, except in the case of certified colors. The use of an unsafe additive constituted adulteration, but to stop such use (after the food containing the additive was already being sold to the public), Food and Drug officials were required to demonstrate that such substances might be harmful or deleterious in some quantity.

Food additives which are subject to the Amendment are "any substance the intended use of which results or may reasonably be expected to result directly or indirectly in its becoming a component or otherwise affecting the characteristics of any food..." excluding those generally recognized by qualified experts as safe (GRAS in the Washington jargon) under the conditions of their intended use.

Under the Food Additives Amendment of 1958, before an additive may be used, the proponent of the additive must establish the safety of the proposed use of the additive, and must obtain from the Food and Drug Administration a regulation permitting that use. He must also satisfy the Administration that the additive will perform the function claimed for it and, if a limit is necessary, that the amount to be used is not greater than is reasonably required to achieve the intended effect. The regulation, when issued, may, if appropriate, place a tolerance (or quantity limitation on the amount which the food may contain) and must specify any other conditions of use that may be necessary to protect the public health.

The Amendment forbids issuance of any regulation permitting the use of any substance in any amount whatever which "is found to induce cancer in man or animals." This clause has caused a great deal of controversy. Many scientists feel the clause does not permit the exercise of scientific judgment and bars the use of substances for which safe tolerances or levels of use could be determined.

The definition further excludes color additives and substances used as pesticides on raw agricultural products (pesticides are covered by the provisions of the Pesticide Amendment of 1954), pesticide chemicals to the extent that they are intended for use or are used in the production, storage, or transportation of any raw agricultural commodity, and any substances used in accordance with any sanction or approval granted prior to the enactment of the Food Additives Amendment, pursuant to the Act itself or the Poultry Products Inspection Act, or the Meat Inspection Act.

Obviously, the definition of a food additive, as contained in the Amendment, is somewhat complicated and highly technical. The definition used in the publications of the Food Protection Committee of the National Academy of Sciences is perhaps more meaningful so far as the general public is concerned.

(3) The Color Additive Amendments of 1960 were enacted for several reasons. Prior to this legislation, coal-tar colors were controlled by a special provision of the Pure Food Law while all other colors added to food were covered under the Food Additives Amendment. All colors are now covered under the Color Additive Amendments.

Until this Color Additive Bill became effective, coal-tar colors could not be used unless the FDA listed them as "harmless and suitable for use." The provision provided further that each batch of the color must be certified for harmlessness by the FDA. No provision was made for tolerances for safe amounts. As a result, some colors which were completely safe in actual use were removed from the approved list because massive doses were shown to be harmful to experimental animals.

Under the Color Additive Amendments, a color additive is a substance which, when added to a food, drug or cosmetic, or to the human body, is capable of imparting color thereto. However, substances which are used solely for purposes other than color are not included in the definition of color additives under this amendment.

The Color Additive Amendments, like the Food Additives Amendment, permit industry to apply for tolerances for any colors if scientific evidence shows that the colors will be safe under normal conditions of use. Also like the Food Additives Amendment, no color may be approved in any amount whatsoever if it is found to induce cancer in man or animals.

The Color Additive Amendments provide that whenever a question arises as to whether a color additive may induce cancer, a scientific advisory committee will be established at the initiative of the FDA or at the request of any person who may be adversely affected by the FDA's decision. The advisory committee is to be composed of experts selected by the National Academy of Sciences. The committee is authorized to examine and report upon any matter arising in connection with the question of whether the additive will induce cancer, if such matter requires the exercise of scientific judgment.

Other Laws Affecting Food Entering Into Interstate Commerce

The Federal Meat Inspection Act, passed in 1906, makes it illegal to ship meat and meat food products in interstate or foreign commerce unless they have been inspected and bear the stamp of approval of the Federal meat inspector. This act also requires the inspection of all cattle, sheep, swine, and goats before entering the slaughtering house. The slaughtering house itself is also subject to inspection. The inspection applies to all parts of carcasses intended for human consumption, and to processed and manufactured meat and meat food products such as smoked ham and bacon, and to cooked meats of all kinds, such as sausage and canned products. Meat may be inspected any time during processing or manufacturing.

Any product that fails to pass inspection must be destroyed or reprocessed to satisfy inspection standards. If products are found to be unsuitable for human food, they are marked "Inspected and Condemned" by the inspector.

Specific uses of additives which had been approved under the Meat Inspection Act prior to the Food Additives Amendment are exempted from further approvals by the Food and Drug Administration under the Amendment. Before a new food additive can be used in a meat or a meat food product, its safety must be established to the satisfaction of the Meat Inspection Division as well as the Food and Drug Administration. Research required and supporting data are the same type as outlined previously. The law is administered by the Agricultural Research Service of the Department of Agriculture.

The Imported Meat Act, a section of the Tariff Act of 1930, provides that all imported meats shall be inspected under the same standards as domestic meats.

The Poultry Products Inspection Act, which became effective in 1959, applies not only to poultry and poultry products produced for interstate and foreign commerce, but also to those used in major consuming areas whether they move across state lines or not. The Secretary of Agriculture may designate such consuming areas.

The Act provides that such poultry and poultry products must be inspected and stamped indicating that they are approved for wholesomeness. Adulteration is prohibited. A product is not deemed adulterated if it contains a substance unavoidably present under good manufacturing practice, or that is permitted by other provisions of the Federal law which sets tolerances for such a substance.

Other acts define certain foods. For example, butter was defined in a 1923 act. Non-fat dry milk was defined in a 1956 amendment to a 1944 act. Filled milk was defined in a 1923 act, and is unlawful. The term "filled milk" means any milk, cream, or skimmed milk (in any form) which has been blended with any fat or oil other than milk fat so that the resulting product is an imitation or semblance of milk, cream, or skimmed milk. The definition exempts certain proprietary compounds not readily mistaken for milk, used customarily by physicians and stated groups such as hospitals and child welfare associations.

State and Local Laws -- In general, foods and drugs not transported across state lines are not subject to Federal laws and regulations. The states have their own pure food laws to prevent the adulteration and misbranding of foods. These vary greatly from state to state depending on local needs and conditions. Some are patterned very closely after the Federal laws, and in many states the enforcing agency is given the power to accept or adopt the Federal definitions and regulations not only for foods and drugs, but also for pesticides and other dangerous materials that might find their way into foods. Many of the states are at present in the process of adopting food additive laws closely following the provisions of the Federal amendments. Cities and counties also may have laws and ordinances to prevent the adulteration and misbranding of foods.

LUNCH (1)

MATERIALS LIST

$ .50 for each student from school budget

(The later activity connected to this one will also require $ .50 per student.)

LUNCH (1)

DATA SHEET Group _____

BRAND NAME	SIZE OF PACKAGE	PRICE PER ITEM

PROCEDURE

LUNCH (1)

The following Activity is designed as an initiation to this unit. The students will be asked to do some grocery shopping for the purpose of providing themselves with lunch.

Little discussion or immediate follow-up is suggested for this Activity, as the results of this Activity will be used at a later time.

Divide the class into groups of six to eight students. Tell the students that each group is to act as a team which will plan a meal for themselves (a lunch rather than a complete dinner). The students are to plan a meal which they will actually prepare after they have bought the ingredients at a grocery store. Each group should decide on one lunch menu.

Tell them that they will be allowed to spend $ .50 per person. Avoid giving the students any further instructions, such as those encouraging them to plan a "well-balanced" meal.

Let the students get together in their groups to discuss their meal plan. They must record the decisions of the group, and use them later as a shopping list. They may find it helpful to appoint one person to be record-keeper.

When the shopping list has been agreed upon, a copy of it is turned in to the teacher who then gives the group $ .50 for each person.

Each group may wish to select two students to actually purchase the ingredients for their group, once they have made their decision. It will probably take the students less than one-half hour to complete their purchases once they get to the store. They may not be able to find or afford what they have recorded on their original shopping list. They should be forewarned to then do the best they can with what they have.

Instruct them to bring the things they buy to class the following day to eat as their lunch.

For the present time, avoid an extensive discussion of the ingredients bought by each group. However, a short report to the rest of the class might be made by each group, listing the components of their meal.

Make sure that each group also keeps a complete list of the ingredients they finally purchased, including the brand name, size of package, price of each item , total cost of the meal, etc. Record this information on the Data Sheet. For practicality, the teacher should collect them for reference in the final Activity in this unit. The class will need the information from this Activity to compare with additional information to be gained later.

It is possible that some groups may neglect to plan for certain eating utensils (knives, forks, spoons, plates, drinking cups, napkins, etc.). This is to be expected, however, and part of the value of this plan may be analyzing the things various groups forgot.

PREPARING CONVENIENCE MEALS

WITH HOME - COOKED MEALS

MATERIALS LIST

Optional Activity:

Frozen pizzas

Ingredients for homemade pizzas

PROCEDURE

COMPARING CONVENIENCE MEALS WITH HOME - COOKED MEALS

Convenience is built into many consumer products today, including foods. Convenience foods, for the most part, are more expensive than are home-prepared foods. Therefore, if the actual monetary cost is the primary consideration and assuming the quality and nutritional value are approximately equal, foods should be home-prepared. There are times, however, when time is more important than cost.

A common example is the working mother. The working mother is helping her family by adding to her family's total income. She usually does not have as much time as the non-working mother to spend in the preparation of meals, and in some cases, for her, convenience foods may be a necessity.

In this Activity, students will be expected to do a study of the cost, and wherever possible, the time for each way of preparing various foods.

It may be desirable to initiate a short discussion about the differences between convenience foods and meals or foods which are prepared "from scratch" at home.

Explain to the class that they will be studying some of the differences between meals prepared each of the two ways. It is possible that many in the class will be uncertain about what "convenience foods" are, and a short discussion about or clarification of the term will be quite helpful.

Questions, such as the following, might be asked:

What is meant when something is described as being "convenient" or is a "convenience?"

Why are conveniences nice to have?

What is a "convenience food?" List some convenience foods that might be found in a typical supermarket. Why do people buy "convenience foods?"

What types of people would be most likely to buy "convenience foods?"

After some discussion about convenience, have the class attempt to list various types of convenience meals that might be duplicated at home; for instance, a typical T.V. dinner such as one with turkey and gravy, mashed potatoes, cranberry sauce, peas and pudding. The class should be able to come up with several meal plans utilizing ingredients which may be found packaged in convenience form.

If the class has trouble preparing such a list, the teacher may wish to suggest menus such as the following:

1. Chicken vegetable soup
   Roast beef dinner, peas, (with gravy and potatoes)
   Crescent rolls
   Vanilla pudding
   Coffee

2. Beef patties
Mushroom gravy
Baked potato
Green beans
Grapefruit segments
Milk

3. Beef stew
Lettuce wedge salad, Russian dressing
Lemon cake
Tea

4. Grilled frankfurters
Baked beans
Rye bread
Fruit cocktail
Sugar cookies
Tea

Note: According to figures released by What's New in Home Economics, October, 1967, the following relationships were found between the above meals indicating the time difference and price between these meals fixed at home and the same meals fixed from convenience packages.

Meal #1	Convenience	34 min.	$3.13
	Home-prepared	143 min.	3.22
Meal #2	Convenience	35 min.	3.12
	Home-prepared	124 min.	2.46
Meal #3	Convenience	16 min.	1.72
	Home-prepared	130 min.	1.42
Meal #4	Convenience	68 min.	2.01
	Home-prepared	168 min.	2.00

Although this study is not extremely recent, the results still give some indication of the relative cost and preparation time required for convenience and home-cooked meals.

Below are listed several additional convenience foods compared in price with home-prepared foods, also from What's New in Home Economics.

Dish	Servings	Convenience (cents)	Home-prepared (cents)
Beef dinner	11.0	59.0	45.0
Turkey dinner	12.5	59.0	22.3
Pizza	8.3	38.6	20.3
Hash browns	3.9	6.7	3.7
Apple Pie	4.7	8.2	6.2

Do not inform the students of the relative difference in price and time difference suggested by the above tables. Their assignment, once they have figured out what foods to examine, will be to calculate the difference in price between the same foods in convenience form and those which would have to be home-prepared. Each student, or pair of students, may be assigned one or more menus (such as those suggested).

Warn students that they must look at more than the total price of the item or package. If necessary, review the procedure for finding cost per ounce (See the Activity, "Packaging -- Determining Cost per Ounce"). Remind them that comparing the cost of two packages does not yield accurate results unless the size of the packages is the same.

For this Activity, do not be too concerned about requiring the students to figure out the time differences of the preparation process.

From your findings, are convenience foods more or less expensive than the same foods fixed at home?

Are convenience foods easier to buy than the same foods unprepared (in other words, which type is more readily available)?

Do convenience foods taste as good as home-prepared foods?

Can you make any other general statements about the differences between home-cooked and convenience foods?

OPTIONAL ACTIVITY

As an optional activity ,the students may wish to make the following recipe. The purpose is to compare further the difference in cost and preparation time required to make pizza -- frozen (convenience) and homemade.

Almost every grocery store sells frozen prepared pizzas which need only to be heated.

You may wish to use the following recipe for the home-made pizza. Try to use exactly the same ingredients as those used in the frozen pizza -- you will probably want to buy the frozen pizza first.

Base

3 cups sifted flour
1 cup corn meal
3 tsp. baking powder
2 tsp. salt
1/2 cup dry milk
2/3 cup lard
1 cup water

Topping

1/4 cup cooking oil or bacon drippings
3 - 6 oz. cans tomato paste
1/3 cup water
2 cups diced meat
garlic salt to taste
oregano
2 cups grated cheese

Instructions:

For pizza base, sift together the dry ingredients. Cut in shortening until mixture resembles coarse crumbs. Add water, stir lightly until ingredients are dampened. Knead gently on lightly floured board.

Divide the dough into four parts. Roll each to fit in the bottoms of eight inch greased pans. Brush dough with oil or bacon drippings. Combine tomato paste and water and spread over dough. Add chopped diced meat and garlic salt.

Sprinkle with cheese and oregano. Bake in a preheated oven (425°) about 25 minutes. Makes eight servings.

When the students buy the ingredients for their home-made pizza, make sure that the prices per unit are recorded and kept. Remind them again that, if they buy a package of dry milk for instance, they figure the cost of only the portion which they use, not the total cost of the package. The students should also keep a record of the time spent in preparation.

After they finish making both pizzas, allow each student to sample both of them. (Perhaps the class will wish to make several of each kind of pizza so each student gets more than a small sample). This will give them the opportunity to compare the taste and appearance of the two kinds.

Which pizza took the longest amount of time to prepare?

Which pizza cost the most to make?

Which pizza had the best appearance?

Which pizza had the best flavor?

Which kind of pizza will you probably prepare at home in the future -- frozen or homemade? Why?

QUALITY OF PRODUCTS

MATERIALS LIST

About $25.00 cash from school budget

Weights

Fish hooks and line

PROCEDURE

QUALITY OF PRODUCTS

Most of us at some time have relied on price tags as an indication of quality and have been disillusioned. The amount a person spends on a product does not necessarily indicate its quality, i.e. medium price does not necessarily equal medium quality.

We have probably also relied on reputation and found that an unknown product equaled or surpassed its reputable counterpart in quality. If this is true how can a consumer get the most quality for the least money? He certainly can't run tests on every item he purchases. However, an aware consumer keeps mental or written notes on the product he buys.

To increase the student's awareness and skill of objective product analysis, run a few tests in your classroom. The students may be amazed at the differences that exist between the products suggested below for testing. Keep records, compare results, plan future purchasing habits.

Taste Tests

The testers should be blindfolded so they aren't influenced by appearance. The results from at least a dozen testers should be analyzed so that the results aren't biased.

1. Fresh vegetables and cello wrapped vegetables

If carrots are in season, buy a bunch of fresh carrots with green heads attached, and a bunch packaged in cellophane or plastic bag. Cut several from each bunch into sections. Run the taste test and see which is preferred.

2. Canned foods

Buy the same canned food made by several different companies. Canned tomatoes by various companies make good comparisons. Run the taste test and see which is preferred.

3. Products with additives vs. without additives

Old fashioned peanut butter is often available in the large grocery stores. This peanut butter contains only peanuts so check the label. Also, buy the peanut butter with the additives. Compare the two in a taste test. The "original" peanut butter might well lose out as we are used to peanut butter of a certain texture and gooeyness.

Content Check

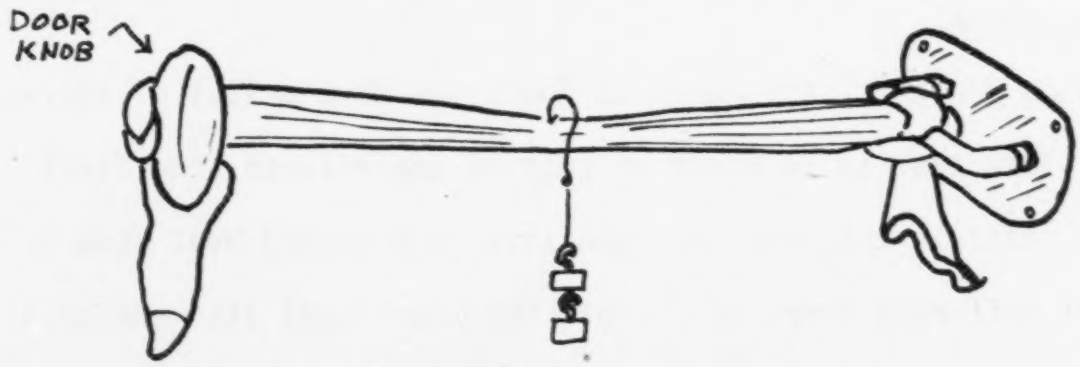
When you check the label on foods you find a list of ingredients. This list is in order of bulk of ingredients, the first listed being in the greatest quantity. Buy canned beef stew by several different companies. Note the ingredient list and categorize the cans as to amounts of certain ingredients. For example, place all stews in one category that list "potatoes" first in the list of ingredients.

Do the prices compare favorably with the label listings? For example, is the stew which listed potatoes first cheaper than the stew that lists beef first? Open the cans, separate the ingredients and compare the quantities for each can. Which one had the most gravy? Which had the most beef? Which is the best buy for the product received?

Quality Check

Buy three pairs of hose, one pair inexpensive, one pair relatively expensive and another of an expense midway between the two. Keep track of the brand.

Make or borrow some weights that can be attached one to another. Tie one to a length of fish line. Tie a fish hook to the opposite end of the line. Stretch one nylon of each pair and fasten it so there is tension on the stocking. You should be able to press down with your finger and meet resistance. Hook the fish hook through one-fourth inch length and one thickness of nylon.



Which stocking takes the most weight before the weight pulls through? Which returns to its original shape in the least time? Which is the better buy for the money?

Testing Product Claims

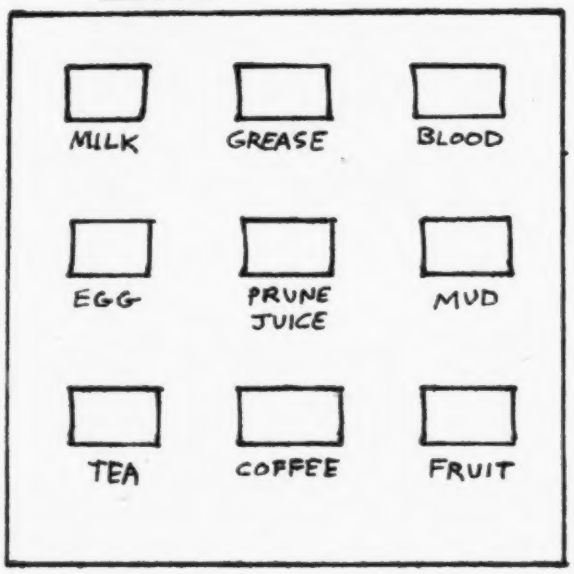
Certain materials and carpeting claim to be stain-resistant. Obtain a material that makes such a claim. Stain the material with a substance listed by the manufacturer as one that won't stain. Clean the material. Does the stain come out?

sketch

carpeting sample

cardboard

cutout windows



You can repeat this experiment using cotton and a laundry detergent that claims to remove certain stains.

CARBOHYDRATE DIET

MATERIALS LIST

14 copies of Data Sheet

Carbohydrate counter (available at super markets)

Merit Publications
Department L
P. O. 511
Stamford, Connecticut 06904
(50¢ per copy)

or

Dell Publishing Company, Inc.
750 Third Avenue
New York, New York 10017
(25¢ per copy)

CARBOHYDRATE DIET

DATA SHEET

(One sheet needed for each day of the week)

Day of the Week _____

Meal	Food Consumed	Portion	Grams of Carbohydrates
Breakfast			Sub
			Total
Lunch			Sub
			Total
Dinner			Sub
			Total
Snacks			
			Total
			Daily Total

PROCEDURE

CARBOHYDRATE DIET

We hear much talk about how each individual needs to eat "well-balanced," nutritional meals. Home economics classes emphasize the basic constituents of foods - proteins, fats and carbohydrates. Yet most of us, especially teenagers, eat too many of the wrong kinds of foods. French fries, hamburgers and cokes can hardly be considered nutritionally well-balanced. If one adds chips and dip for snacks and chocolate shakes for evening treats, there is no wonder why dieting has become a national obsession.

This Activity is designed to isolate one of the basic nutrients in food. The students will examine their eating habits and count the number of carbohydrates that they eat. They will use this number in deciding whether they are eating nutritional meals.

It will be necessary to obtain one carbohydrate counter for each student. These counters come in small booklets and are sometimes called "Counter and Carbohydrate Diet." Dell publications and Merit publications (see Materials List) produce these booklets that are available in most supermarkets or on a book stand for $ .25 to $ .50.

Instruct the students that for one full week they will be examining their eating habits. It may be necessary to review with the students what the basic constituents to food are and how they can be counted. Pass out the carbohydrate counters and discuss how they are used. If the counter includes information on a carbohydrate diet of 40 to 60 grams, instruct the class to ignore it and pay attention to the grams according to the foods they eat.

Using the ratings in the book, the students should record on the Data Sheet everything they eat each day for a week. Each day total the number of carbohydrates they eat.

After one week, each student should tally the number of days in which they ate foods exceeding 100 grams of carbohydrates. Discuss with the students various aspects of their results. Compute a weekly average gram count for each meal. At which meal were 100 grams exceeded most often? How much over 100 were these meals? What foods did they eat the most? How did this effect the gram count? Which foods did they eat that were highest in carbohydrates? If they were to cut down on the number of carbohydrates, what changes in their eating habits would be necessary?

To test the students proposed methods of cutting down their carbohydrate intake, the students will repeat the previous procedure. This time, however, they will be restricted to 100 grams of carbohydrates per day. They should record their eating habits the second week on a Data Sheet for each day of the week. Remind them that they must plan their eating to stay under 100 grams of carbohydrates per day.

Discuss the results of the second week. What other food constituents were they eating while they were restricting the number of carbohydrates? What foods did they avoid? What foods did they eat most often? Of what nutritional value are carbohydrates?

Some students may want to investigate their eating habits further by using the tables in the United States Department of Agriculture bulletin, Nutritive Value of Foods.* (Contact the Agricultural Extension Service, University of Minnesota, phone 373-1246.) These tables give the nutritive values of most foods and provide data making for planning a nutritionally adequate diet.

* Nutritive Value of Foods, Agricultural Research Service, Bulletin #72, Washington D. C., 1964.

PROCEDURE

PACKAGING - DETERMINING COST PER OUNCE

Many products commonly sold in grocery stores can be purchased in various quantities and sizes. Often, however, consumers mistakenly assume that products sold in large quantities or packages are a "better buy" than the same products sold in smaller packages. In this Activity, students are asked to shop comparatively and determine if, indeed, there is any relationship between the size of the packaging and cost per ounce or cost per serving.

The students will be assigned to do some actual observation and comparative shopping in local supermarkets and small grocery stores. For the purpose of this Activity, disregard the nutritional value of the products or the claims that the manufacturers make about the quality of their product.

It is not essential for all the students to do their study in one store. In fact, it may be preferable if several stores are used.

Explain to the students that they will be doing a comparison of the cost of various sizes of products in different types and

sizes of containers or packages, and that they will be required to figure the cost per ounce of various products. The teacher may find it necessary to go over simple math procedures with the class to make sure the students understand how to compute the cost per ounce of a product. A procedure such as the following may provide all the review necessary.

If a certain product costs 40 cents for an eight ounce can (the number of ounces is listed somewhere on the label), the cost per ounce can be figured by dividing the cost ($.40) by the number of ounces (8).

$$\text{total cost} = \frac{\$.40}{\text{no. of ounces} = 8} = \frac{\#.05}{1} = \$.05 \text{ (cost per ounce)}$$

If a 16 ounce can of the same product costs 76 cents, the cost per ounce would be 76/16, or 4.75 cents per ounce, a savings of .25 cents per ounce over the eight ounce size.

Repeat as many examples as necessary to give students the skill of determining the cost per ounce for various sizes of products. Student should examine various kinds of products, rather than only one or two. For example, the class could examine cost per ounce of products such as cold cereals, canned peaches, syrups, soups, peanut butter, etc. Students should be encouraged to look at 5 to 10 different products. They should list all sizes available for each brand and product they examine. The class may wish to develop a check list similar to the following one:

PACKAGING - DETERMINING

COST PER OUNCE

DATA SHEET

Brand name & product	Total cost	÷	No. of ounces	=	Cost per ounce	Best buy (Check one size for each product)
Elephant Brand Peanut Butter						
Mousy Cheese Spread						
Sure Fire Spray starch						

This Activity may be conducted most efficiently by dividing the class into teams of two or three students, each with a Data Sheet to complete.

Teams may select the items they wish to examine in two different ways. If students can do so, in advance of the time they go into the stores, they should make a list of the 5 to 10 products they wish to examine. By doing this, they will save some time. However, many students will be unaware of the types of products that are packaged in different sizes. For those students, simply walking through the aisles looking for different sizes of the same product may be the best way to decide which products to examine. (For students who can not prepare a list ahead of time, the teacher may wish to suggest products that they might look for - potato chips, soups, cleaning supplies, laundry detergents, cereals, etc.). They will probably see that most products are sold in various sized packages, for a number of reasons.

After the students have collected the information required on the Data Sheet, have them report their findings to the rest of the class.

Which size packages usually cost the <u>least</u> per ounce (small, medium, large)?

Which size packages usually cost the <u>most</u> per ounce (small, medium, large)?

How many variations from this pattern did you find in the products you examined? In other words, are the large sizes always the best buy? Why or why not?

Which is the most important to most shoppers, the total cost of the product or the cost per ounce?

Do you think most shoppers usually figure out the cost per ounce of the products they buy? Why?

If a shopper is concerned about cutting the cost of his grocery products, will he be concerned more with the total cost or the cost per ounce?

Are there certain types of products which usually cost more per ounce in larger sizes? Why?

Is the cost per ounce on most items usually higher or lower on products in small grocery stores? Why?

LUNCH (2)

MATERIALS LIST

$.50 per student from school budget

LUNCH (2)

DATA SHEET

Group_____

Brand Name	Size of Package	Price per Item

PROCEDURE

LUNCH (2)

This is a repeat of the Activity, "Lunch (1)" in basic mechanics. Hopefully, the students will be able to apply some of the skills and insights they have learned from the previous Activity. When introducing the idea of another lunch, allow plenty of discussion this time.

Perhaps you will have the same groups plan their meals or you may wish to reorganize. However it is organized, the recorded decisions for menus, when compared to the previous records, should give a rough evaluation of the kind of progress students have made in understanding part of their social environment.

When lunch is finished, allow time for comparing notes and ideas on quantity, quality, taste convenience and waste of the meals that the different groups planned. How did Lunch (2) compare with Lunch (1)? Were the accessories (forks, salt, napkins, etc.) remembered this time?

A MINI-BUSINESS

MATERIALS LIST

About $25 cash to cover losses

MINI-BUSINESS

DATA SHEET

General Rules of Procedures for Establishing a Mini-business

Product: Artistic Design Hooked Rugs

Production Time: 5 weeks

Sales date: _____

1. Rugs may be in any color, size or shape.
2. Any number of rugs can be produced.
3. Profit will be computed by substracting all production costs from the selling price of each rug.
4. All purchases for production must first be requested on a Purchase Order form and submitted to the teacher for funding.
5. Each company must appoint a bookkeeper to keep track of production costs. Donations must also be listed.
6. School supplies used for such things as advertising, recordkeeping or sketching must be requested on a Purchase Order form and the price will be established.
7. During the five weeks of production, all class periods will be free to work in companies.
8. One member of each group should be appointed as a sales representative to meet with the teacher periodically.

A MINI-BUSINESS

PURCHASE ORDER REQUEST

To be ordered from:

_____

_____

_____

Name of company:

_____

Date submitted:

_____

no. of items	DESCRIPTION OF ITEM	Price per unit	Total

A MINI-BUSINESS

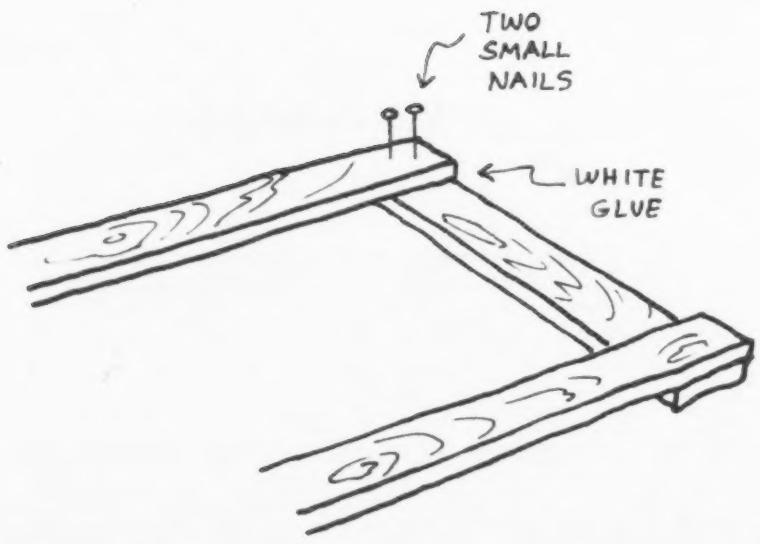
DIRECTIONS FOR HOOKING A RUG

Materials needed:

- Rug punch needle (one that gives two levels of loops)
- Wooden frame made of 1" x 2" firring nailed together
- Rug yarn of various colors
- Stapler or heavy staples
- Burlap (commercial white or ivory)
- White thread and sewing needle
- Small nails
- White glue
- Hammer

Procedures:

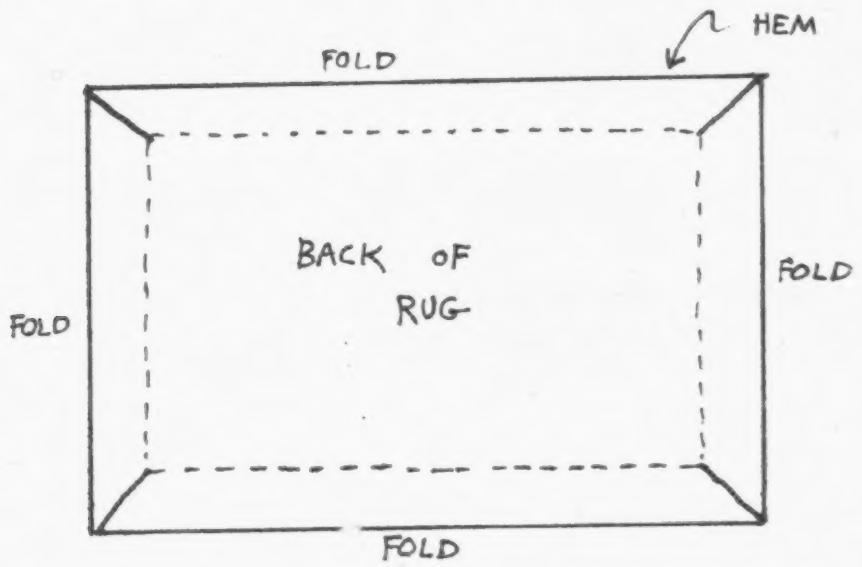
1. Design a pattern for the rug. This must be at least roughly planned before further steps can be taken. Designs might be originals or reproductions enlarged by using an opaque projector. Transfer the design to thin tissue paper or newsprint using a black marking pen.
2. Determine the size and shape of the rug based on the design. Construct the frame to correspond to the size and shape. A simple form of construction is illustrated here. More complex structure may be devised after consultation with the school's industrial arts department.



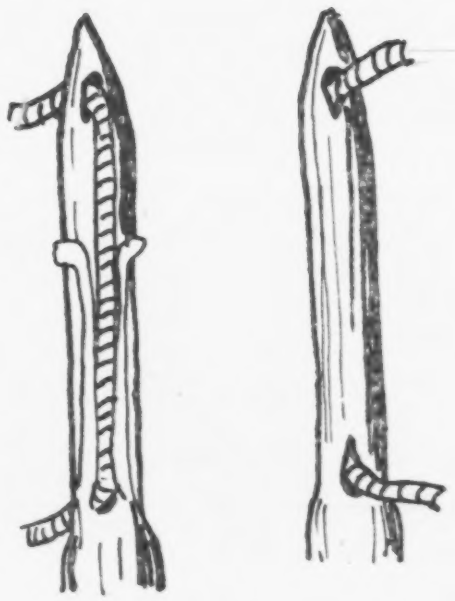
3. Transfer the design onto the back of the rug with a black marker. The back of the rug faces you while you work. Patterns should be transferred backwards so you can work from the marked side. If the design is on thin enough paper, retrace it with a black marker so it goes through to the burlap. Carbon paper will also serve as a means of transferring the design.
4. Stretch the burlap onto the frame. You must remember to extend the burlap 1-1/2 inches over each side for a hem. Lay one side of the burlap along the edge of the frame and staple it in the middle. Pull, stretching the burlap to fasten to the two opposite sides. Continue to staple one side and then the opposite until the burlap is completely fastened to the frame.
5. The actual method of rug hooking is found on the needle package. The needle is pushed through the burlap as far as it will go. Draw the needle back until the tip is even with the burlap skimming over the top about one-

fifth of an inch and pushed in as far as it will go. Make the stitches close, five stitches to an inch. Continue the process following the design outline. To change colors, push the needle through to front and then cut the yarn at the eye. Trim the ends to the length of the loops. Mistakes can easily be ripped up by pulling the end of the last stitch.

6. When hooking is completed, remove the rug from the frame fold back the hem and stitch.



SAMPLE RUG PUNCH NEEDLE



Thread yarn through eye (A) from outside, draw through tube and out eye (B), leave one inch of yarn protruding from point (B).

Use wire gauge for short loops

Remove wire gauge for long loops

A MINI-BUSINESS

BUSINESS EVALUATION

Based on production and sale of your company's rug, mark the following evaluation by circling the number your company decides best fits.

1. How realistic were the goals of the company?

   set out to do too little 1 2 3 4 5 set out to do too much

2. How well planned were your supply purchases?

   under supplied 1 2 3 4 5 over supplied

3. How suitable were the materials purchased?

   Inadequate 1 2 3 4 5 Adequate

4. How economical were your purchases?

   under spent 1 2 3 4 5 over spent

5. How well did the company operate?

   work was done by only a few 1 2 3 4 5 work shared by everyone

6. Did everyone know their job?

   no 1 2 3 4 5 yes

7. How quick did your rug sell?

   slow 1 2 3 4 5 fast

8. How important was your design to the sale?

   no important 1 2 3 4 5 very important

9. Did the colors of your rug have anything to do with the sale?

   no 1 2 3 4 5 yes

10. How would you evaluate the quality of your work?

    sloppy, messy 1 2 3 4 5 neat, careful, good quality

11. How did the quality of workmanship effect the sale?
very little 1 2 3 4 5 a great deal

12. How satisfied are you with your profit?

not at all 1 2 3 4 5 very satisfied
satisfied

PROCEDURE

A MINI-BUSINESS

It seems essential to the study of consumerism to examine the other side - the side of the business world. Many of the findings in the preceding Activities can be better understood if a new point of view is taken. The "why's" of cost variance, product variance and price variance are understood when sound business procedure is recognized. Only then does the role of consumer become clear.

This Activity establishes background in the understanding of business practices. The students will set up competitive business groups within the class. All will have the same product to produce. The groups will have to establish most of the specific procedure for their businesses. The basic outline of policy will be given to each group. At the end of a given period the products will be sold. At that time, the success or failure of each group will lead to some basic understandings of "success" in the business world.

Explain to the students that for the next five weeks they will be involved in a business enterprise. Their product will be Artistic Design Hooked Rugs. Tell them that they will work in groups, each group competing to form the most profitable business. The products will be sold on _____ (give a date approximately five weeks away). Remind them that they may choose to run their

businesses in any manner they wish, as long as it conforms to the General Procedure Sheet.

They should meet and establish a means of selling the rugs. They may want a neighborhood sale, a door to door sale, a school sale or they may want to work in connection with a local merchant to sell from his store. The actual selling may extend over a period of time, but the products must all be ready on the set date of sale. A member from each group will be chosen to serve as sales representative.

Following the sale of the rugs, the groups should compute their profit. Each group or company should fill out a Business Evaluation Sheet. (See Materials List). This will evoke discussion among company members. The evaluation may also be compared in a general class discussion of the Activity. They might discuss which company was more successful. Did color have an effect on sales? size? shape? quality of materials used? Was the rug design important to the sale of the rug? Was the design important to the profit?

How did the companies operate? Was there a division of labor? If there were salaries who would get paid the most in each company? Who would get the least?

Which company had the lowest product cost? How did they achieve this? How could costs be cut even more? Would the quality remain the same?

MUSHROOMS - ANOTHER PRODUCT

FOR A MINI-BUSINESS

Another product for a mini-business is oyster mushrooms. These are edible mushrooms, considered a delicacy by many people. They can be gorwn on an artificial medium of sawdust and oats in glass jars. This process was developed by Dr. Neil A. Anderson, Associate Professor of the Department of Plant Pathology at the University of Minnesota.

Growing oyster mushrooms is particularly relevant to areas which have plentiful growth of aspen trees, because this process, if developed to a large production scale, could provide a profitable industry for a small community.

MUSHROOMS

MATERIALS LIST

Oyster Mushroom spawn from:

Dr. Neil Anderson, Associate Prof.
Department of Plant Pathology
University of Minnesota
St. Paul, Minnesota 55101

(Keep refrigerated until it is to be used.)

Glass jars - one quart or larger which will fit into pressure cooker

Pressure cooker

Stove

Aluminum foil

String

1/2 inch sticks as long as depth of jar

5 to 10 lbs. oats, (from feed store)

25 to 50 lbs. sawdust (several large paper boxes full from lumber mill or someone with a chain saw or woodworking shop)

Plastic bags to package harvested mushrooms

Whatever materials needed for marketing

(See Mini-Business Procedure suggestions)

Put two to four cups of water into the bottom of the pressure cooker before beginning to heat the cooker on the stove. Then put the covered container of oats and sawdust in.

Mushroom spawn is available to schools from Dr. Anderson on a limited basis. The best procurement procedure is to have one person from each school district obtain spawn for all teachers who will use it.

Directions for Growing the Oyster Mushroom

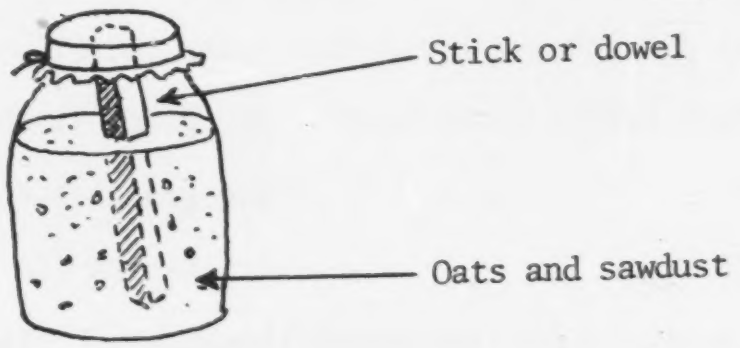
The following materials and proportions are suggested to make a compost for growing the Oyster Mushroom, Pleurotus ostreatus.

Sawdust (aspen works best)	500 grams (1 lb. 2 oz.)
Oats	100 grams (3.6 oz.)
Water	1.5 liters (50 oz.)

Mix oats, sawdust and water thoroughly. Place a one-inch wooden dowel (or stick) the length of the container in the center of the container, (see diagram), and add compost. Cover the top of the container with aluminum foil or draft paper and secure tightly with string. Autoclave (cook in a pressure cooker) the compost at 15 pounds pressure for 60 minutes and reautoclave (cook again in a pressure cooker) after 24 hours for an additional 60 minutes. When the compost has cooled to room temperature, remove the dowel from the container and pour the spawn (vegetative part of the mushroom used for starting cultures) onto the compost in the jar getting some spawn into the hole left by the dowel.

Replace the cover quickly and keep the container covered for two weeks. At this time remove the cover and water the top of the

compost daily. The compost will be white in color with the vegetative strands of the mushroom. If patches of black, blue, or green molds are present it indicates that there has been contamination by other fungi. Mushrooms will appear from the top of the container 4 - 7 days after the cover has been removed and they will continue to form for 6 - 8 weeks depending on the size of the container. The optimum temperature for growth of the spawn and for mushroom production is 75 ^{o} F.



New cultures can be started from the vegetative growth (in the sawdust-oats medium) of old cultures in the same manner as described by Dr. Anderson. Spawn or old vegetative growth should be kept refrigerated until it is used to start new cultures.

CONSUMER PRESSURE

DATA SHEET

Number of cans, plastic containers and bottles thrown away

	Sun.	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.	Total
John								
Earl								
Jackie								
Debbie								
Christy								
Ned								
Mary								
Total								

CONSUMER PRESSURE

DATA SHEET II

	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.	Sun.	Total
Weight of bag trash								
Total no. pounds								

PROCEDURE

CONSUMER PRESSURE

Ultimately, the enemy of environment is ourselves. We are the most grossly wasteful people in the world - "consumers who demand (or at least let themselves be cajoled into desiring) new, more, faster, bigger, cheaper playthings without counting the cost in a dirtier, smaller, sicker world." We must stop buying pollution. And we must make it uncomfortable for those who purvey it.

Nothing is as painful as poor profits, and the decision to stop manufacturing products harmful to the environment will come only when there is no market for them.

Your class can apply consumer pressure by organizing and educating your community. They can start on the following topics using the methods described.

1. No-deposit, no-return containers and aluminum cans, a major solid waste problem.
2. Automobiles. Encourage people to at least buy only one car per family, preferably a small one with a good smog control device.
3. Detergents with a high phosphate content. Phosphates fertilize algae and vegetation, resulting in the green scum which increasingly borders our rivers and lakes.

4. Pesticides containing the following compounds DDT, Dieldrin, Lindane, Chlordane, Heptachlor, Endrin, Aldrin, 2, 4, 5-T, BHD, 2,4-D, Taxaphene, or any compound containing lead, mercury, or aresenic. The trouble with pesticides is that they tend to linger on after their original application causing harm to organisms other than those they were intended to destroy.
5. Foil wraps - they cannot be reprocessed and used again.
6. Colored tissues, paper napkins, etc. Dyes released in the manufacturing process pollute streams.
7. Disposable diapers and items with merely decorative packaging. These increase the demand on the paper (and hence timber) industries and add to the waste disposal problem.
8. Fur coats and feathered hats from wild or endangered species.
9. Mechanized recreation such as snowmobiles, motor boats, etc., which add to air, water, and noise pollution in recreation areas.

No Return Cans, Plastic Containers and Bottles

Collect data: Members of the class should separate cans, plastic containers and bottles from the rest of their garbage for a week. These are recorded on Data Sheet I. (See Materials.)

There are 52 weeks in a year, so the total number of containers thrown away (i.e. 269) is multiplied by 52 to find out approximately how many cans, plastic containers and bottles their families threw away in a year.

The average number per family can be found in the following way:

Total thrown away by the students families in a year	÷	Number of families	=	Average number thrown away per family in one year

This figure can be used in a community consumer pressure campaign. However, it is more impressive if it is converted to the total number for the community. Count the number of families in the community and make the following calculation:

Average number of cans, plastics and bottles thrown away by one family in a year	x	Number of families in your community	=	Number of cans, plastics and bottles thrown away by the families in your community in a year

For added shock value, this figure could be used to calculate the length of a line these cans, plastics and bottles would mkae if they were lined up one at a time.

Use these figures while asking the community to buy only returnable bottles and limit the number of cans and plastic containers they purchase. The art students could help design a brochure to be distributed to the community in a door-to-door campaign. This could be combined with a cans and bottles collection drive. The following Twin Cities companies buy bottles and cans:

Aluminum cans	Habco Metal Corp. 2810 22nd Ave. So. Minneapolis, Minn. ph: 722-6664
Non-returnable bottles	Midland Glass Co. Hwy. 101 and Scott Co. Rd. 83 Shakopee, Minn. ph: 332-8053 or 445-2340

Paper Products

Great quantities of paper products are purchased and then disposed. These are mainly paper containers and disposable paper products (cups, plates, diapers, office supplies etc.). Unfortunately, most of these paper products are disposed of by burning in inefficient trash barrels or incinerators introducing particulate matter into the air. This is double problem because the making of paper products removes trees from our forests, and the disposal of paper products often causes air pollution.

However, paper can be reprocessed and re-used. This is not being done because the paper industry is structured to produce paper from trees and not from used paper. The technology exists to do the latter - all we need now is some consumer pressure to show that this is what the consumer wants.

Collect data: Members of the class should separate paper products from the rest of their garbage. Once a week they should calculate the weight of paper waste by weighing them on bathroom scales.

Students weight with bag of waste minus student's weight = weight of wastes.

This information is kept on Data Sheet II. (See Materials.)

Have students calculate the waste for a month, assuming the week was a typical week:

$$\frac{4}{\text{no. of wks. in a month}} \times \frac{26 \text{ lbs.}}{\text{no. lbs. in one week}} = \frac{104 \text{ lbs.}}{\text{no. lbs. in one month}}$$

The number of pounds of paper waste produced by the entire community can be calculated in the same way the total of cans, bottles and plastics was figured.

Can the class set up the machinery for collection of waste paper once a month? This means educating and encouraging the community to separate and save their paper wastes. It means finding a buyer and a means of getting the paper to the buyer. It means finding some club or organization that will collect the paper regularly. If you must pay to get the paper to the buyer, there

might not be a profit in the project. It would have to be undertaken as a project to help save the environment rather than a money-making project. A Twin City firm which buys waste paper is:

Hoerner Waldorf Corp.
2250 Wabasha Ave.
St. Paul, Minnesota
Ph: 645-0131

RESOURCES

Money Management, Your Food Dollar, Household Finance Corporation: Chicago, 1964.

Testing For Public Safety, Underwriters Laboratories, Inc.: Chicago.

Nutritive Value of Foods, Home & Garden Bulletin #72, Superintendent of Documents, U. S. Government Printing Office: Washington, D. C. 20402, 1964. (Price: 25¢)